IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF PENNSYLVANIA

LAMBETH MAGNETIC STRUCTURES, LLC, Plaintiff, v. WESTERN DIGITAL CORPORATION, WESTERN DIGITAL TECHNOLOGIES, INC., WESTERN DIGITAL (FREMONT), LLC, WESTERN DIGITAL (THAILAND) COMPANY LIMITED, WESTERN DIGITAL (MALAYSIA) SDN.BHD, and HGST, INC. Defendants.	Civil Action No. 2:16-cv-00541-CB Judge Cathy Bissoon ***Electronically Filed***

WESTERN DIGITAL'S MEMORANDUM IN SUPPORT OF ITS MOTION FOR SUMMARY JUDGMENT

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’988 patent	U.S. Patent No. 7,128,988, which is Sharkey Decl., Ex. 1
Ex.	Exhibit to the Declaration of Lauren Sharkey in Support of Western Digital’s Motion for Summary Judgment (filed simultaneously herewith)
Sharkey Decl.	Declaration of Lauren Sharkey in Support of Western Digital’s Motion for Summary Judgment (filed simultaneously herewith)
LMS	Lambeth Magnetic Structures, LLC
HDD	Hard disk drive(s)
SBS	SBS Magnetics, LLC
Acacia	Acacia Corporation
[redacted]	[redacted]
[redacted]	[redacted]
SUF	Statement of Uncontested Facts (filed simultaneously herewith)

*Emphasis has been added throughout Western Digital’s brief unless otherwise stated.

I. INTRODUCTION

The '988 patent claims a narrow and hypothetical notion: combining layers of materials such that a first layer with so-called "broken symmetry"—an unequal amount of crystallographic variants from a six-variant system—is placed on a second template layer with a predominantly hexagonal crystal pattern in order to, the patent posits, somehow achieve uniaxial magnetic behavior in the first layer. But this theory fails in the real world. As shown by the indisputable evidence, the relevant layers of the accused Western Digital and HGST products [redacted] Summary judgment of non-infringement should inexorably follow.

Whether there was cause-and-effect between the claimed symmetry broken structure and uniaxiality was a central dispute in the *Markman* proceedings in this case. Western Digital asked the Court to construe the claims to require that a "uniaxial symmetry broken structure" is one that is "uniaxial as a result of the structure being symmetry broken" (Dkt. 88 at 18), whereas LMS argued that symmetry breaking merely "***contributes*** to the uniaxial behavior of the structure." Dkt. 53 at 25 (emphasis in original); *see also* Dkt. 53-1, ¶ 80. The Court rejected LMS's proposed construction, and adopted Western Digital's. At this point, this action should have ended with a stipulated judgment of non-infringement. But LMS chose a different path: ignoring that the Court already rejected this argument, LMS plows on as if nothing changed, contending that because symmetry breaking allegedly ***contributes to*** uniaxiality in the accused products, albeit in a completely unquantified and unmeasured way, Western Digital infringes. Because this argument is an improper rehash of the same erroneous claim construction argument LMS already lost, non-infringement should be found as a matter of law. LMS similarly ignores the Court's claim construction that the template layer must be "predominantly (111) hexagonal" and offers no evidence of the predominance of the surface pattern on the tens of thousands (if not millions) of

crystals in any Western Digital layer. This too should lead to summary judgment.

Summary judgment should also be entered for a lack of enablement. It is unsurprising that the accused products do not practice the claims of the '988 patent, as even the named inventor was unsure of his hypothesis while rushing to file his patent application just days before [redacted]. The art of making thin film materials with specific crystallographic structures for use in magnetic products, such as hard disk drives, is an exacting one, requiring precise control of manufacturing conditions and materials. The '988 patent acknowledges this, stating that processing conditions must be "just right" in order to achieve a uniaxial symmetry broken structure. Despite these incontrovertible facts, the patent includes no details that would enable one of skill in the art to make the invention as required by 35 U.S.C. § 112(2). In fact, Dr. Lambeth was never able to build a structure that embodied the claimed invention, let alone a polycrystalline structure (*i.e.*, more than one crystal) such as the ones in the accused products LMS now contends infringe the '988 patent claims. [redacted] There can be no legitimate dispute that undue experimentation would be required for a POSA to practice the full scope of the asserted claims.

Finally, as a matter of law, LMS cannot recover damages for alleged infringement occurring before it filed the complaint against Western Digital because LMS cannot meet its burden of proving compliance with the marking statute codified at 35 U.S.C. § 287. A prior owner of the patent licensed it to companies who made and/or sold products allegedly covered by the patent claims without marking those products per the statute. Because there was no constructive

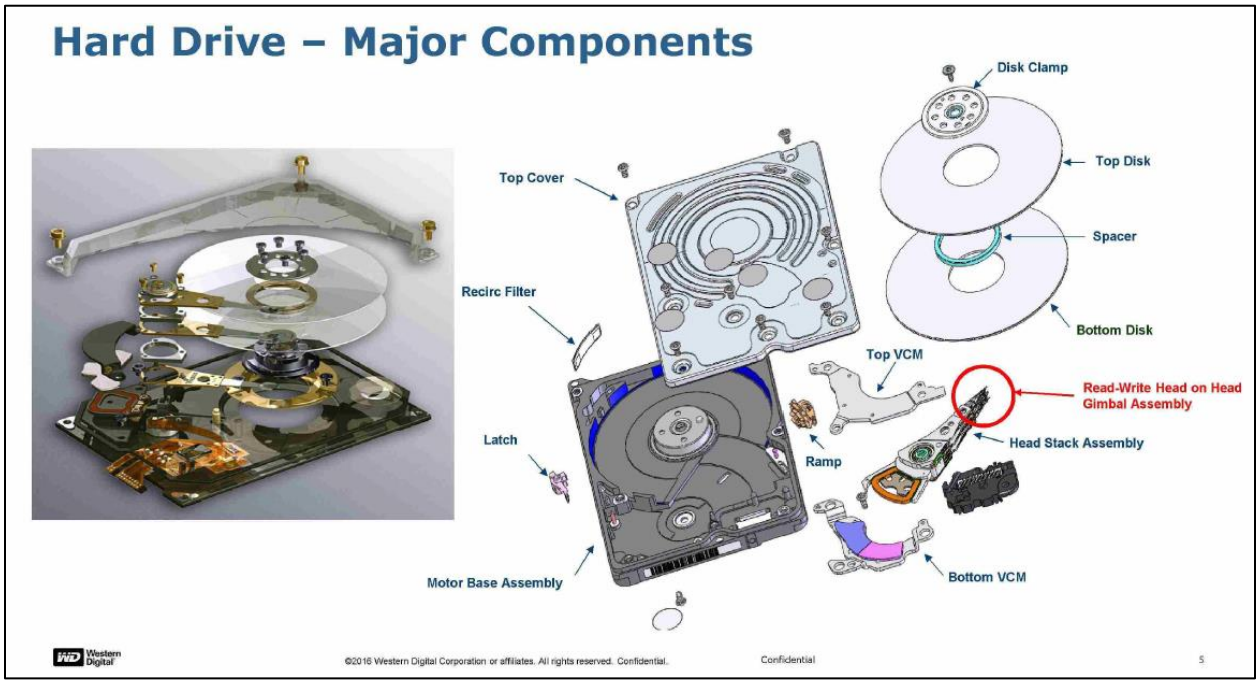
notice via marking and no actual notice provided by LMS to Western Digital, LMS cannot recover pre-suit damages and partial summary judgement should be entered.

II. UNCONTESTED FACTUAL BACKGROUND

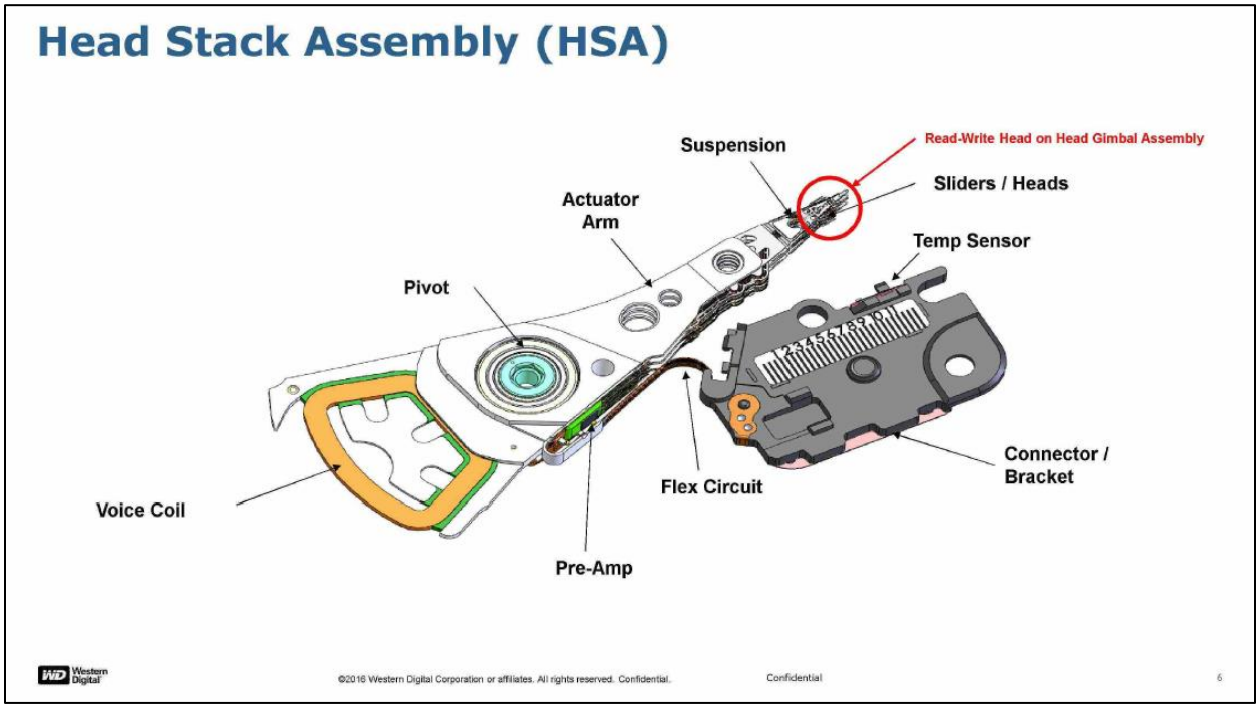
A. Overview Of Western Digital And The Accused Technology

Western Digital Corporation was founded in 1970 as a hard disk drive ("HDD") company. SUF, ¶ 4. HGST was founded in 2003 as a merger of the HDD businesses of IBM and Hitachi. *Id.* IBM is widely credited as having invented the HDD in 1956, at the site in San Jose that now serves as Western Digital headquarters. *Id.*, ¶ 5. As of the 2006 issuance of the '988 patent, both Western Digital and HGST sold HDDs using perpendicular magnetic recording, or PMR, based on years of research. *Id.*, ¶ 62. In 2012, Western Digital acquired HGST. *Id.*, ¶ 4. Western Digital and HGST operated as separate engineering teams for the next 4 years, developing different HDD products. *Id.*

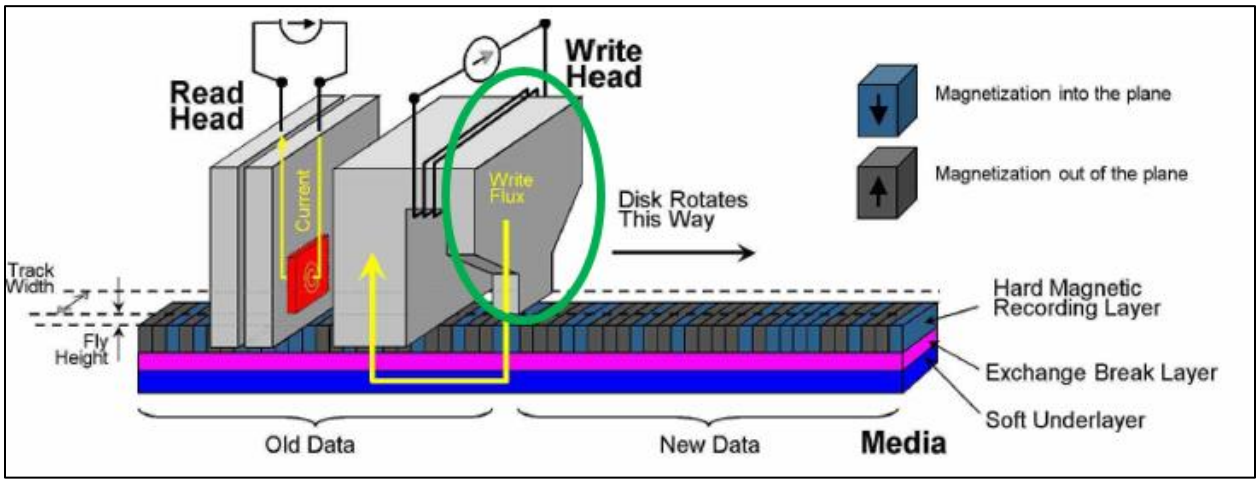
HDDs consist of many components, including the media, spindle motor, circuitry, clean chamber, and a "head stack assembly," or HSA. *Id.*, ¶ 53.



Ex. 2 at HGST0020760. At the end of each arm of the HSA is a "head gimbal assembly," or HGA. The HGA includes a "slider," as well as other supporting structure as seen below. SUF, ¶ 52.



Ex. 2 at HGST0020761. The slider contains both the read head and the write head among other parts, as shown below. SUF, ¶ 51.



Ex. 2 at HGST0020762 (annotated). The write head contains layers (found within the green circle above) that transmit the magnetic writing flux—this is called the write pole or sometimes the main

pole. SUF, ¶ 49. The write pole sends the flux onto the layer that then "writes" the magnetic direction of the bit of the media, which the read head can then "read." *Id.* A cross section of these layers is shown below from the perspective as if laying on the media. *Id.*, ¶ 47.

B. Technical Background Regarding Uniaxiality

By way of background for the below arguments, anisotropy is a term used to describe direction dependency in magnetic structures. *Id.*, ¶ 39. Uniaxiality is the preference for the magnetic anisotropy of a structure to lay along one given direction. SUF, ¶ 40. So if there is uniaxial anisotropy in a magnetic structure, the magnetic anisotropy will lie in a single direction. *Id*. There are several sources of magnetic anisotropy which can determine whether a structure is uniaxial, including the shape of the structure ("shape anisotropy"), stresses associated with the structure ("stress anisotropy"), pair ordering (where atomic pairs in the material are preferentially formed) and magnetocrystalline anisotropy. *Id.*, ¶¶ 42-44. The ultimate magnetization direction in the structure is the interaction of all of these sources of anisotropy. *Id.*, ¶ 44.

C. Lambeth Systems Obtains The '988 Patent

For the over ten years leading up to the '988 patent, Dr. Lambeth was a professor at Carnegie Mellon University and affiliated with the University's Data Storage Systems Center ("DSSC"). Western Digital (including previously through IBM), is a long-time sponsor of the DSSC, paying an annual fee to support the DSSC's research and receiving a license to all of the DSSC's intellectual property in return. SUF, ¶ 204. If Dr. Lambeth conceived of the claimed inventions through his work with the DSSC, the '988 patent is licensed to Western Digital and HGST and no infringement could lie.[1]

In August 1999, Dr. Lambeth took [redacted] SUF, ¶ 205. [redacted] working on what would later become the '988 patent. *Id.*, ¶ 207. LMS alleges that Dr. Lambeth conceived of the claimed inventions in April of 2000, and the patent's application was filed in August 2001. Between those two dates, Dr. Lambeth made and analyzed [redacted] samples comprising different combinations of materials, made with different thicknesses and using different processing conditions. *Id.*, ¶ 228.

Dr. Lambeth's [redacted] to conclude at the end of August 2001, which coincided with when [redacted] Dr. Lambeth believed would be prior art to his own patent. *Id.*, ¶ 227. Thus, Dr. Lambeth needed to file his patent application by August 29, 2001, before [redacted] *Id.* But Dr. Lambeth was not ready to file: of his [redacted] samples, only a single one was what he believed to be "symmetry broken." This sample was denoted LS0909-6 and analyzed with the "x-ray pole figure" measurement included as Figure 14 of his patent. *Id.*, ¶ 214. Importantly, this sample,

[1] This is a contested issue for another day, and need not be resolved to adjudicate this motion.

even if taken to be symmetry broken, *arguendo*, is not uniaxial and so does not practice the claims of the '988 patent which require both conditions to be met. *Id.*, ¶ 163. Conversely, Dr. Lambeth also identified a single sample (LS1425_2cx) which he believed to be uniaxial, but there is no pole figure or any other evidence to show that that sample contained unequal amounts of variants of a six-variant system, as it must to meet the symmetry broken requirements of the claims. *Id.*, ¶¶ 165, 168. [redacted].

Through his testing and analysis, Dr. Lambeth observed that in order to obtain symmetry broken structures, "the processing conditions [must be] ***just right*** [as] not only will the variants not be symmetry broken, but the variant set will be the three variant [prior art] rather than the six new ones." *Id.*, ¶ 143. Facing the lack of success described above, Dr. Lambeth concluded just two days before filing his application [redacted] *Id.*, ¶ 222. And, even on the same day Dr. Lambeth filed his patent application, he conceded that he was [redacted] *Id.*, ¶ 225. Yet, the '988 patent lacks any detail about required processing steps [redacted] The patent is also silent regarding the conditions necessary to use his invention in

polycrystalline samples that contain millions of crystals. Indeed, Dr. Lambeth [redacted]

Nonetheless, perhaps confused by the extensive and winding discussion in the patent specification of numerous other aspects of Dr. Lambeth's theories and the related physics, the '988 patent issued on October 31, 2006. But, in the end, the fruits of Dr. Lambeth's rush to obtain a patent are claims that nobody has ever been known to practice (including Dr. Lambeth himself), and a sloppy and prolix written description that is riddled with scores of typographical errors and that omits all of the relevant detail needed to show how to build the claimed inventions.

D. Lambeth Systems Sells '988 Patent To Acacia, Who Licenses Third Parties

Having succeeded in obtaining a patent he believed was not encumbered by the DSSC licenses, Dr. Lambeth next sought to monetize it.

In December 2010, Lambeth Systems sold the '988 patent to SBS, a subsidiary of Acacia Research, a well-known non-practicing entity known for its expertise in patent monetization. SUF, ¶¶ 245-246. As part of the assignment of the '988 patent to Acacia, [redacted] *Id.*, ¶¶ 246, 261-269. [redacted] d [redacted] *Id.*, ¶¶ 252-255. [redacted] each make, use, or sell HDDs that are alleged to infringe the '988 patent. *Id.*, ¶¶ 249-251, 256-259, 270-272. However, neither [redacted] ever marked any products with the '988 patent number, nor was either required to do so under their respective deals with Acacia. *Id.*, ¶¶ 260, 273.

In March 2013, unhappy with Acacia's performance, Dr. Lambeth filed suit against Acacia for breach of contract. *Id.*, ¶ 247. As part of the [redacted]

[redacted] which in turn assigned it to plaintiff LMS. *Id.*, ¶ 247-248.

E. LMS Sues Western Digital

LMS sued Western Digital on May 2, 2016. Dkt. 1. LMS asserts independent claims 1 and 27 and a number of dependent claims. Claim 1 is representative:

> 1. A magnetic material structure comprising:
> a substrate;
> at least one bcc-d layer which is magnetic, forming a ***uniaxial symmetry broken structure***; and
> at least one ***layer providing a (111) textured hexagonal atomic template*** disposed between said substrate and said bcc-d layer.

During claim construction, LMS argued that the term "uniaxial symmetry broken structure" should cover only symmetry breaking that "***contributes*** to the uniaxial behavior of the structure." Dkt. 53 at 25 (emphasis in original), citing Dkt. 53-1 at ¶ 80. The Court adopted Western Digital's construction, that a "uniaxial symmetry broken structure" is one that is "uniaxial as a result of the structure being symmetry broken." Dkt. 88 at 18. Moreover, the Court found other claim constructions relevant to this motion as follows. *Id.* at 8.

Term/Phrase	Construction
"[Layer] providing a (111) textured hexagonal atomic template"	Layer that is predominately (111) hexagonal and that provides an atomic template.
"Uniaxial"	Having an anisotropy energy density function with only a single maximum and a single minimum as the magnetization angle is rotated by 180 degrees from a physical axis.
"Symmetry broken structure"	A structure consisting of unequal volumes or unequal amounts of the bcc-d variants of a six variant system.
"Variant(s)/orientational variant(s)"	One (two or more) of a set of possible crystal orientations.

Following claim construction, the Court set a schedule for expert reports and expert discovery. Dkt. 119. LMS then sought and received an extension for opening reports so that it could use "specialized equipment in order to take the desired magnetic measurements on [Western

Digital's produced] monitor wafers." Dkt. 123 at 7; Dkt. 123-1 at ¶¶ 25-28. Yet, when LMS served its expert reports, they all were conspicuously lacking any of these measurements. SUF, ¶ 64. Instead, as will be explained below, LMS's expert avoided magnetic testing and relied instead on a "dark field analysis," an exploration of the light emitted by crystals in order to approximate crystal orientation. But as will be explained below, this analysis—which was not a test even mentioned in the '988 patent or known in the art to be used to calculate magnetic measurements—is insufficient as a matter of law to prove that symmetry broken structures exist. Nor did LMS sufficiently obtain proof that the template layer was "predominantly" (111) hexagonal, instead relying on only a handful of crystal samples to extrapolate (without statistical analysis) to the tens of thousands of crystals in the layer.

III. LMS HAS FAILED TO SHOW THAT THE ACCUSED PRODUCTS CONTAIN A "UNIAXIAL SYMMETRY BROKEN STRUCTURE"

A. Legal Standard

Courts routinely grant summary judgment of non-infringement where the patent holder fails to meet its burden of coming forward with sufficient evidence of infringement to create a genuine issue of fact for trial. *Fujitsu Ltd. v. Netgear, Inc.*, 620 F.3d 1321, 1337-38 (Fed. Cir. 2010) (affirming summary judgment of non-infringement based on expert analysis of testing data showing that a key limitation of the claims was not met). As the moving party, Western Digital need only show "an absence of evidence to support the nonmoving party's case." *Celotex Corp. v. Catrett*, 477 U.S. 317, 325 (1986). To avoid summary judgment, LMS must "come forward with 'specific facts showing that there is a genuine issue for trial.'" *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 587 (1986) (quoting Fed. R. Civ. P. 56(e)). "General assertions of facts, general denials, and conclusory statements are insufficient to shoulder the non-movant's burden." *TechSearch, L.L.C. v. Intel Corp.*, 286 F.3d 1360, 1372 (Fed. Cir. 2002).

A "genuine" issue of material fact must be one that comports with the Court's claim construction. *See Cordis Corp. v. Boston Sci. Corp.*, 658 F.3d 1347, 1357-58 (Fed. Cir. 2011) (affirming JMOL of non-infringement and disregarding expert testimony that was "based on an incorrect understanding of the claim construction"); *see also Quest Licensing Corp. v. Bloomberg L.P.*, C.A. No. 1:14-cv-561(GMS), 2017 WL 239345, at *3 (D. Del. Jan. 19, 2017) (same).

B. LMS's Infringement Theory On The "Uniaxial Symmetry Broken Structure" Violates The Court's Claim Construction.

Western Digital's products [redacted] do not contain a uniaxial symmetry broken structure as required by the claims of the '988 patent. But LMS has ignored this fact and tried to reshape the meaning of the claims and the Court's construction. First, LMS argued for a construction of "uniaxial symmetry broken structure" with no causation between uniaxial and symmetry breaking. The Court disagreed. Next, LMS learned through the discovery in this matter that [redacted], so LMS shifted gears to allege that the materials within the layer are uniaxial through a calculation never performed before in the art. But their calculation to try and prove uniaxiality ignores "stress anisotropy" and "shape anisotropy." So to try and circumvent those (actual) causes of anisotropy, LMS has retreated even further to alleging now that the '988 patent covers a mere source of anisotropy that can allegedly contribute in any way to uniaxiality. But this position is contrary to the Court's claim construction which found that the structures must be uniaxial as a result of being symmetry broken.

1. LMS Cannot Show [redacted]

[redacted] Because

of this, LMS alleged that "[w]ithout the inventions embodied in the '988 patent, Defendants and their competitors would not have been able to develop a write head suitable for use with PMR media" and "[w]ithout the invention claimed in the '988 patent, HDD companies, including Defendants, would not have been able to successfully commercialize PMR HDDs." *Id.* But after millions of pages in discovery and hours of depositions, [redacted].

It is undisputed that LMS's expert, Dr. Coffey, offers ***zero*** magnetic data or proof in his infringement report. *Id.*, ¶¶ 64-69.[2] This is despite the fact that the asserted claims require a "*magnetic* material structure" containing a "BCC-d layer which is *magnetic*," and where "uniaxial" was construed as having "an anisotropy energy density function with only a single maximum and a single minimum as the *magnetization* angle is rotated by 180 degrees from a physical axis." Dkt. 88 at 8.

[redacted]

[redacted] LMS's expert tried and failed to find magnetic proof that Western Digital's products infringe. The only magnetic measurements Dr. Coffey obtained did not support LMS's allegation [redacted] SUF, ¶¶ 64. Not only did Dr. Coffey not rely on these results, but he failed to provide them in his expert reports. *Id.*

[redacted]

[redacted]

LMS's expert, Dr. Coffey, admits that these images accurately show that [redacted] SUF, ¶ 72. If the Accused Products were uniaxial according to the '988 patent, the magnetization [redacted] *Id.*, ¶ 71. [redacted] *Id.* If symmetry breaking controls the magnetization direction as LMS claims, then one would expect [redacted] *Id.*

Because the [redacted], Western Digital uses [redacted]

[redacted]. *Id.*, ¶¶ 73-77. A structure that was uniaxial according to the patent would [redacted] *Id.*, ¶ 75. Thus, since the Accused Products [redacted]

2. LMS's Interpretation Of Uniaxial Symmetry Broken Structure Limitations Cannot Ignore Shape And Stress

Because LMS obtained no magnetic testing and was faced with Western Digital's own magnetic testing to the contrary, LMS chose to evade the Court's claim construction. First, Dr. Coffey decided to instead "calculate" an energy density function using dark field images obtained by Dr. Clark. SUF, ¶ 111. A dark field analysis creates an image that is dark everywhere except at specified locations where targeted crystal planes have scattered electrons, thereby creating bright spots. *Id.*, ¶ 102. This form of testing, however, analyzes ***all*** crystals that cause a 200 light diffraction including BCC crystals in the (110) orientation (which both parties agree are required in the '988 patent claims) ***or*** BCC crystals in the (100) orientation (which both parties agree would not practice the claims). *Id.*, ¶¶ 102-107. [redacted] *Id.* Based on Dr. Clark's measurements, LMS's other expert, Dr. Coffey, assumed all the crystals were (110) orientated and calculated the alleged contribution of symmetry breaking towards alleged uniaxial behavior ("uniaxial anisotropy") [redacted] in the accused HDDs in units of force called oersteds (Oe). *Id.*, ¶ 111.

The use of dark field imaging to calculate an energy density function (to try to show uniaxiality) is something which LMS's experts had never encountered in the field prior to this litigation. *Id.*, ¶¶ 108-110. And by its nature, dark field calculations on which Dr. Coffey relies ignores shape anisotropy and stress anisotropy. *Id.*, ¶ 79. He alleges that his calculations are

sufficient to prove that the layer structure is uniaxial as a result of symmetry breaking because the "uniaxial symmetry broken structure" limitation is only based on certain "intrinsic" properties of the layer such as magnetocrystalline properties, while the layer's shape and stress properties are "extrinsic" and can be excluded. *Id.*, ¶ 80.

Dr. Coffey and LMS are wrong as a matter of law. The claim as written requires "at least one bcc-d ***layer*** which is magnetic, forming a uniaxial symmetry broken structure." Thus, the layer ***as a whole*** must form the uniaxial symmetry broken structure. LMS cannot rewrite this claim to mean that "at least one bcc-d layer which is magnetic where the *intrinsic properties* of the material used in the layer have a uniaxial symmetry broken structure." By its plain meaning, the layer structure constitutes all of the layer's properties, including the shape of the layer and the stress the layer is under. There is no basis for the assertion that the claim allows one to parse out the shape and stress properties of the layer and ignore them. Indeed, the specification of the '988 provides otherwise when it distinguishes prior art because its "anisotropy behavior [of the layer structure] is due to the strain or shape or pair ordering associated with the second phase." SUF, ¶ 81 (quoting '988 patent at 6:46-49). A patentee may not avoid summary judgment by having its expert read limitations into the claim that are neither found in the claim nor even supported by the specification. *MyMail, Ltd. v. Am. Online, Inc.*, 476 F.3d 1372, 1378 (Fed. Cir. 2007).

3. At Best Symmetry Broken Anisotropies Are De Minimis Contributors To Uniaxiality, And Thus Cannot "Result In" Uniaxiality

Because LMS was unable to prove that [redacted], LMS engages in scientific gymnastics to force-fit a semblance of an energy density function. But this calculation ignores the real causes of anisotropy in the products. Dr. Coffey's calculations do not account for other sources of magnetic anisotropy such as shape, stress, and pair ordering, and thus cannot prove that the accused structure is uniaxial ***as a result of*** symmetry breaking. [redacted]

[redacted] This leaves symmetry breaking—at best if one credits all of LMS's assumptions and methodology *arguendo*—as a mere contributor to uniaxiality. But contribution is not enough. Per the Court's claim construction, LMS and Dr. Coffey were required to show that symmetry breaking *results in* uniaxial behavior in the structure. They have not.

Even assuming Dr. Coffey's calculations were valid ([redacted] This relationship between sources of anisotropies is undisputed. *Id.*, ¶ 90. Dr. Coffey's "calculations" of the alleged symmetry breaking anisotropy for each of the ten devices is illustrative. *Id.*, ¶ 85.

[redacted]

These values of "symmetry broken anisotropy" [redacted] While Dr. Coffey offered no calculations as to the value of the shape, stress, or pair ordering anisotropies on the layer, he does not dispute the calculations provided by Western Digital's expert, Dr. Kryder. SUF, ¶¶ 88-90. For example, comparing just stress anisotropy to "symmetry breaking anisotropy," [redacted] *Id.* Thus, as Dr. Kryder

explains, [redacted]. *Id.*, ¶ 89. Dr. Coffey did not dispute these numbers. *Id.*, ¶ 88-90.

Likewise, Dr. Kryder calculated that the shape anisotropy [redacted] *Id.*, ¶ 90. Dr. Coffey does not dispute this. *Id.* Indeed, Dr. Coffey admits that "the in-plane shape anisotropy effects can be significant to the magnetization directions of an object." *Id.*, ¶ 95. Accordingly, shape anisotropy will [redacted] These large contributions from shape are why it is well known that the magnetic properties of the thin [redacted] are dominated by shape anisotropy since the contribution of the other anisotropies are so small. *Id.*, ¶ 96.

In essence, LMS is now arguing that symmetry breaking need not *cause* the uniaxiality of the layer, it need only be a mere contributor to the uniaxiality of the layer. But this argument is exactly what the Court already rejected. At claim construction, LMS argued that no "person of ordinary skill in the art [would] understand that the structure has to be uniaxial as a result of symmetry breaking, but rather, that symmetry breaking contributes to the uniaxial behavior of the structure." Dkt. 53 at 25. The Court rejected LMS's arguments, adopted Western Digital's opposite construction, and held that a "uniaxial symmetry broken structure" requires "a structure that is uniaxial as a result of the structure being symmetry broken." Dkt. 88 at 8. As a matter of law, LMS fails to prove a causal relationship between uniaxiality and symmetry breaking, and any suggestion to the contrary is illusory given the undisputed fact that any alleged symmetry breaking is at best a miniscule contributor to uniaxiality. *See Cordis*, 658 F.3d at 1357-58 (concluding that expert testimony regarding infringement must be disregarded where it was "based on an incorrect understanding of the claim construction").

LMS's "contribution" argument also flies in the face of its allegation that "[w]ithout the invention claimed in the '988 patent, HDD companies, including Defendants, would not have been able to successfully commercialize PMR HDDs." SUF, at ¶ 63. LMS cannot have it both ways—proclaiming a de minimis alleged "contribution" is sufficient for infringement, while at the same time proclaiming the alleged invention was key to enabling a huge technology shift in the industry to justify its monstrous damages position. Both cannot be true. In the end, neither is.

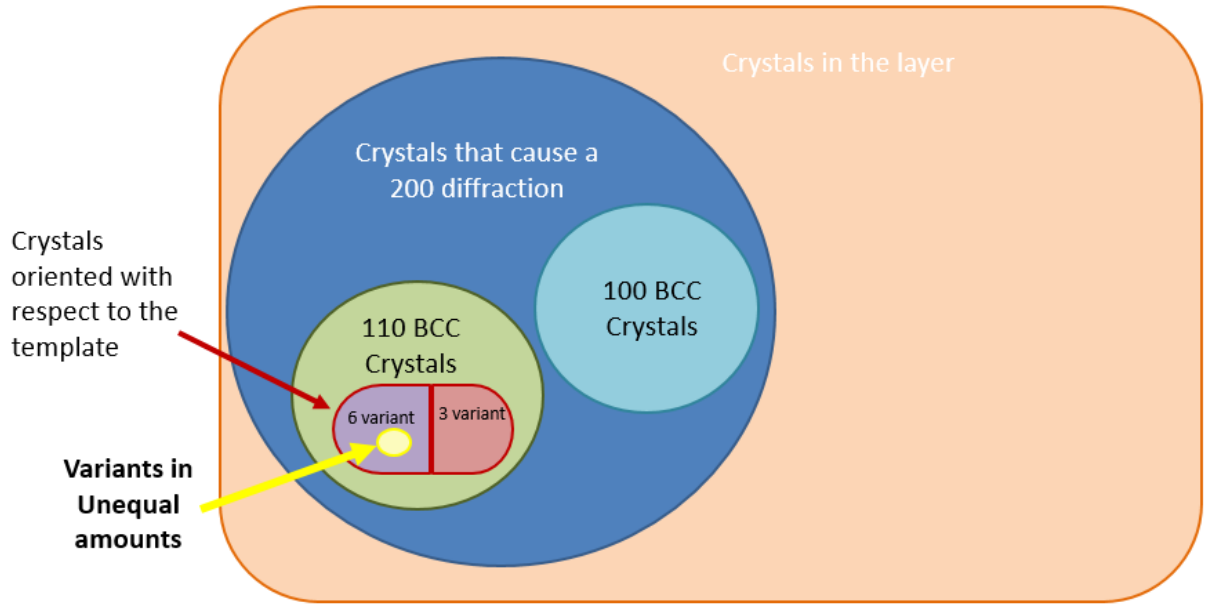
C. LMS Has Failed To Prove That The Accused Devices Are Uniaxial As A Result Of Unequal Populations Of Variants

Not only can LMS not prove that the Western Digital products are uniaxial "as a result" of symmetry breaking, LMS also cannot show that the accused products have the requisite symmetry broken structure, defined to be a "structure consisting of unequal volumes or unequal amounts of the bcc-d variants of a six variant system." Dkt. 88 at 8. LMS failed to present any evidence for either prong of this construction; *i.e.*, that the relevant variants come from a six variant system (as opposed to, *e.g.*, a three variant system), or that there is an unequal amount of these variants. Summary judgment should be entered on these grounds as well. *Celotex*, 477 U.S. at 325.

As described above, both parties agreed during claim construction briefing that the BCC variants at issue are in the 110 orientation ("(110) BCC crystals"). SUF, at ¶ 58. But LMS's experts failed to show such variants in the accused product in their "dark field" analysis. Even if the dark field data were to have been properly collected—a fact in dispute but not part of this motion, it is undisputed that such data can only provide information regarding the number of crystals that cause a 200 diffraction, which is not limited to (110) BCC crystals. *Id.*, ¶¶ 102-107. LMS's experts agreed that either (110) BCC or (100) BCC crystals could cause a (200) diffraction, and that dark field imaging cannot distinguish between the two. *Id.* Dark field data also cannot distinguish between the (110) BCC crystals in a three variant system (or other system) versus those

in a six variant system. *Id*. And because the claim requires symmetry breaking—unequal amounts or volumes of the variants of the six variant system, dark field data is also insufficient, for it cannot determine amounts or volumes. It thus cannot distinguish between a symmetrical six variant system (equal amounts) and a symmetry broken six variant system (unequal amounts). *Id.*

The flawed proof can be seen visually as below. To prove infringement, LMS must show that the unequal amounts of the variants of the six variant system (*i.e.*, those crystals that fall into the yellow section of the Venn diagram) cause uniaxiality. But dark field data can only provide information regarding the crystals that fall within the dark blue circle. By using the dark field image data as the "input" to his calculations, Dr. Coffey is conflating all crystals that cause a 200 diffraction (*i.e.*, the large blue circle of the Venn diagram) with the small subset in yellow. His calculations are thus logically flawed. Any alleged minimums and maximums in dark field data could be due to any of the crystals that fall within the large dark blue circle, such as (100) BCC crystals or symmetrical (not symmetry broken) (110) BCC crystals, and not just the ones in the small yellow subset. Likewise, if the accused products [redacted] it could be any of the crystals in the larger dark blue that are causing [redacted], not necessarily the crystals in the smaller yellow subset.



Because LMS cannot, through the non-magnetic dark field image testing it conducted, show a symmetry broken structure, and because it cannot show uniaxiality *as a result of* any symmetry broken structure, the Court should grant Western Digital's summary judgment motion.

IV. LMS HAS FAILED TO SHOW THAT THE ACCUSED PRODUCTS CONTAIN A "[LAYER] PROVIDING A (111) TEXTURED HEXAGONAL ATOMIC TEMPLATE"

All of the asserted claims require a "[layer] providing a (111) textured hexagonal atomic template," which the Court construed as a "[l]ayer that is ***predominately*** (111) hexagonal and that provides an atomic template." LMS has failed to produce evidence that the Accused Products satisfy the "predominately" requirement in this construction.

At claim construction, LMS argued for the term "predominately" to be excluded from the construction of this phrase. In explaining the need for this word, Western Digital reiterated that no person of ordinary skill in the art ("POSA") would understand the claim limitation to allow for a layer that had one singular (111) hexagonal pattern in the entire layer. The Court agreed and

held that "the term 'textured,' in this context, thus indicates that "(111) hexagonal" is the predominate crystallographic orientation of the layer." Dkt. 88 at 13.

For proof that the Accused Devices have a "[l]ayer that is ***predominately*** (111) hexagonal and that provides an atomic template," Dr. Coffey relies on "fast Fourier transform" or "FFT" images Dr. Clark took for each sample [redacted] Putting aside the scientific errors of these images, which would be an issue for trial, Dr. Clark's sampling was too limited to provide proof of predominance. Dr. Clark only took a handful of FFTs for each sample. It is undisputed that each FFT measured approximately one individual crystal. SUF, ¶ 119. Thus, LMS only has alleged evidence of a [redacted], for each accused product. On the other hand, it is also undisputed that there are [redacted] Accused Products; LMS's expert Dr. Coffey agreed it is [redacted]. *Id.*, ¶¶ 114-117.

The below table shows the number of template layer crystals tested in FFTs by Dr. Clark and a calculation of what percentage of the layer that constitutes for each. *Id.* ¶¶ 118-136.

[redacted]

[3] This column assumes, for the purpose of this motion, that LMS's FFTs show what LMS contends they show: [redacted] Western Digital disputes this. The % of crystals column assumes Dr. Coffey's [redacted] Western Digital disputes this too (the [redacted] but assumes LMS's number for this motion.

These comparisons make it clear that Dr. Clark's testing at best showed only a tiny portion of [redacted]. LMS did no statistical analysis to show it analyzed a sufficient sample size to be representative of the entire layer. SUF, ¶ 137. The only justification is Dr. Coffey's conclusory statement that Dr. Clark's level of sampling is "very reasonable." *Id.*, ¶ 138. LMS has failed to meet its burden to show that the accused products have layers that are "predominately" (111) hexagonal.

LMS has failed to meet its evidentiary burden with respect to infringement to show a "[l]ayer that is ***predominately*** (111) hexagonal and that provides an atomic template," and summary judgment of non-infringement is required.

V. THE '988 PATENT IS INVALID DUE TO LACK OF ENABLEMENT

Even if LMS could prove infringement, the '988 patent is fatally flawed in that it fails to teach one of ordinary skill in the art how to make and use the full scope of the claimed invention without undue experimentation, thus failing the enablement requirement of 35 U.S.C. § 112. This failure is demonstrated in at least four ways. *First*, despite admitting that the claimed invention requires "just right" processing conditions to achieve the desired results, the '988 patent is devoid of any explanation of these key conditions. *Second*, the '988 patent fails to disclose a single

[4] Dr. Clark took FFTs, but found they [redacted] SUF, ¶¶ 134-135.

working embodiment of the claims—a structure that is both uniaxial and symmetry broken. *Third*, as of the date of filing, the quantity of experimentation required by the patent was such that even Dr. Lambeth himself could not create the claimed invention. *Fourth*, the '988 patent has no meaningful limitations on the possible species that would fall under claim 1.

A. Legal Standard

To satisfy the enablement requirement, "the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997). "Enabling the full scope of each claim is 'part of the quid pro quo of the patent bargain' [as…] [a] patentee who chooses broad claim language must make sure the broad claims are fully enabled." *Sitrick v. Dreamworks LLC*, 516 F.3d 993, 999 (Fed. Cir. 2008). Enablement is a question of law based on underlying questions of fact, and is determined as of the patent's effective filing date. *ALZA Corp. v. Andrx Pharms., LLC*, 603 F.3d 935, 940 (Fed. Cir. 2010).

Courts frequently consider some or all of the following factors (called the "*Wands* factors") in assessing whether the amount of experimentation required to practice the full scope of an invention is "undue": "(l) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims." *ALZA*, 603 F.3d at 938 n.5 (citing *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988)). Consideration of each of these factors is not mandatory; rather, "the Court is only required to consider those factors which are relevant to the facts of each case." *ALZA Corp. v. Andrx Pharms., LLC*, 607 F. Supp. 2d 614, 648 (D. Del. 2009), *aff'd*, 603 F.3d 935 (Fed. Cir. 2010). In determining whether the specification enables the full scope of the patent and evaluating the *Wands* factors, the Court may consider evidence outside of

the patent. *In re Wands*, 858 F.2d at 737.

B. The '988 Patent Fails To Provide Any Direction Or Guidance That Would Instruct A POSA To Make The Claimed Inventions

One of the *Wands* factors is the "amount of direction or guidance presented" by the patent specification to allow a person of ordinary skill in the art ("POSA") to make or use the claimed invention. *In re Wands*, 858 F.2d at 737. Put simply, the '988 patent provides none. The specification teaches that achieving a uniaxial symmetry broken structure is difficult "unless the processing conditions are ***just right*** [as] not only will the variants not be symmetry broken, but the variant set will be the three variant [prior art] rather than the six new ones." Ex. 1, '988 patent at 22:53-57. The patent never explains those "just right" parameters for a uniaxial symmetry broken structure, let alone gives guidance or predictions about particular modifications of parameters that might preserve the uniaxial symmetry broken properties observed in structures. *Wyeth v. Abbott Labs.*, 720 F.3d 1380, 1386 (Fed. Cir. 2013) (finding a lack of enablement where "the specification offer[ed] no guidance or predictions about particular substitutions that might preserve the [desired] effects observed in [the claimed invention]"). Similarly, the patent states that parameters should be "optimized," but the optimal range or method of controlling the parameters is not provided. Ex. 1, '988 patent at 40:31-36. LMS's expert, Dr. Coffey, agrees that "[t]he crystallographic properties of thin films are well known to be dependent upon the processing used to prepare the films." SUF, ¶ 186. But the '988 patent does not provide details such as machine geometry, coating information, sputter time, power, substrate-to-deposition-source distance, temperature, deposition rate, substrate bias potential, gas pressure, and base pressure, among others. *Id.*, ¶ 154. Thus, the specification does not teach a POSA how to make or use the invention.

To counter Western Digital's lack of enablement defense, Dr. Coffey cherry-picks quotes from the lengthy background sections of the patent, but these passages fail to provide a legally

sufficient disclosure. For example, he cites to the '988 patent statement that "[t]he technique to obtaining the same easy and hard magnetic axis behavior across an entire polycrystalline sample is to induce the appropriate (110) textured bcc-[d] coupled uniaxial variant set for each of the randomly oriented hexagonal template." *Id.* at 22:12-15. But that excerpt does not explain *how* a POSA would to induce these "special variant sets." The Federal Circuit has found that these types of disclosures are not enabling. For example, in *Harris Corp. v. IXYS Corp.*, the specification stated that "by manipulating the conductivities and geometries of the four semiconductor regions" one could avoid forming a particular structure. 114 F.3d 1149, 1156 (Fed. Cir. 1997). The Federal Circuit still found the patent to be invalid as lacking enablement because "[n]either that passage nor anything else in the specification, however, sets forth ***how*** the 'conductivities and geometries of the four semiconductor regions' can be manipulated so that the claimed device will not exhibit [the undesired structure's] action." *Id.* Likewise here, the '988 patent fails to describe ***how*** for example to induce the uniaxial variant sets, and a POSA would not know how to do this.

C. The '988 Patent Fails To Provide Any Working Examples That Would Enable A POSA To Practice the Claimed Invention

Another factor to consider when determining if a specification is enabled is "the presence or absence of working examples." *In re Wands*, 858 F.2d at 737. The specification does not disclose a single sample that is ***both*** uniaxial and symmetry broken. The patent contains one data point for alleged "proof" of a symmetry broken structure—an x-ray pole figure at Figure 14 (Lambeth sample LS0909-6). SUF, ¶ 162. But the patent does not include any magnetic data for sample LS0909-6 and explicitly states it is ***not*** uniaxial because its template "does not provide the exchange coupling needed to cause uniaxial M-H curves" and "in order to achieve uniaxial magnetic behavior the appropriate set of variants must be exchanged coupled." *Id.* ¶ 163.

The patent also provides one and one only data point for "proof" of a uniaxial structure—

hysteresis loops at Figure 15 (Lambeth sample LS1425_2cx). *Id.*, ¶ 165. But the patent offers no data or measurements on what variants comprise this sample. *Id.*, at ¶ 168. It hypothesizes that a four variant set was selected but that "it was difficult to observe by x-ray pole figure measurement techniques, exactly which set of four variants dominated." *Id.*, ¶ 169. [redacted]

LMS does not assert that any other sample, either discussed in the patent or created by Dr. Lambeth, constitutes a uniaxial symmetry broken structure. SUF, ¶ 174-178. This is dispositive; Lambeth claims a genus of uniaxial symmetry broken structures but fails to disclose any proof, evidence, data, or discussion of data that shows a uniaxial symmetry broken structure exists.

Not only is there no uniaxial symmetry broken structure disclosed in the patent, there is additionally no information regarding ***polycrystalline*** (*i.e.*, more than one crystal) uniaxial symmetry broken structures. LMS is asserting the '988 patent against polycrystalline samples, so the failure to enable a POSA to make uniaxial symmetry broken polycrystalline structures renders the patent invalid for lack of enablement. The only mention of polycrystalline samples in the '988 patent admits that because "the polycrystalline hexagonal template layer and the mixed amorphous and ceramic substrate has a very large interfering set of diffraction peaks no X-ray data was taken." SUF, ¶ 156. It is undisputed that polycrystalline and single crystal samples are completely different, with distinct properties and methods or steps to deposit and analyze single crystal samples will not necessarily work on polycrystalline samples that contain millions of crystals or grains. *Id.*, ¶ 157. Indeed, even the Federal Circuit has recognized, as a matter of law, the basic

scientific principal that disclosures of polycrystalline, monocrystalline, and amorphous layers are distinct and disclosure of one cannot provide enablement for the others. *See Trs. of Boston Univ. v. Everlight Elecs. Co.*, 896 F.3d 1357, 1360 (Fed. Cir. 2018).

D. The Quantity Of Experimentation Necessary To Make And Use The Full Scope Of The Invention is Undue

A third key factor to consider in this inquiry is "the quantity of experimentation necessary" to make the claimed invention. *In re Wands*, 858 F.2d at 737. Given the complexity and number of steps required to make a "uniaxial symmetry broken structure," the experimentation needed to practice the invention is undue and unreasonable. Indeed, the experimentation is so undue that not even the inventor himself could make a uniaxial symmetry broken structure.

1. There Are Several Required Steps To Making A Uniaxial Symmetry Broken Structure That Must Be Performed Under "Just Right" Conditions

There are three general steps needed to make and use the claimed "uniaxial symmetry broken structure." First, one must deposit the necessary layered material, which is time consuming and expensive. SUF, ¶ 180-183. For each sputtering or plating deposition method, there are endless variables that could impact the results, such as "geometries of the vacuum system, deposition rates, the power temperature, … the time of the day sometimes, humidity." *Id.*, ¶ 184. But the '988 patent does not disclose any of these variables. *Id.*. [redacted] The lack of teaching in the patent of processing conditions is fatal to the patent's validity. *See MagSil Corp. v. Hitachi Global Storage Techs., Inc.*, 687 F.3d 1377, 1382 (Fed. Cir. 2012) (finding lack of enablement where "even someone of extraordinary skill in the art [at the filing date] could not have predicted the exact process and materials needed for [a claimed property] over ten years later.")

Second, a POSA would need to apply the correct symmetry broken mechanism, wherein

(a) a six variant system would form rather than a three variant system (*see* SUF, ¶ 187);
(b) there would be unequal populations of these six variants (*see id.*);
(c) the correct subset of those broken variants is selected (*see id.*); and
(d) those broken variants are magnetically coupled *(see id.*).

Each of these "symmetry breaking steps" gives rise to a vast amount of experimentations that can affect the end result of the structure. Indeed, as the patent explains, "unless the processing conditions are just right not only will the variants not be symmetry broken, but the variant set will be the three variants [prior art] rather than the six new ones." *Id.*, ¶ 188. The patent also describes forming the six variant system as "non-trivial to accomplish" and "optimizing all of the conditions simultaneously [is] difficult." *Id.*, ¶ 189.

Finally, the experimentation, time, expense, and effort required to test each sample and determine whether it is, in fact, a uniaxial symmetry broken structure is undue. There is no way (either in the art or explained by the '988 patent) to determine which structures have the uniaxial symmetry broken structure of interest without individually testing each structure. SUF, ¶¶ 191-202. A POSA would need to determine whether the structure was uniaxial by using magnetic testing and then determine if the structure has a symmetry broken structure with x-ray pole figures; both of these tests can take hours and often give inconclusive results. *Id.* And lastly, a POSA would need to determine if the uniaxiality in the structure was *as a result of* symmetry breaking, which would require calculating and eliminating all other causes of anisotropy, such as shape, stress, and pair ordering discussed above. The amount of testing that is required to confirm whether a structure is a uniaxial symmetry broken structure reinforces that the experimentation to make the claimed invention of the '988 patent is undue. *See Wyeth*, 720 F.3d at 1386 (finding that significant testing in "a systematic screening process for each of the many [candidates for testing] is excessive experimentation").

2. Even For Dr. Lambeth, The Experimentation Was Undue

Dr. Lambeth is at least a person of ordinary skill in the art. Despite being armed with his own work and the specification of the '988 patent, he could not make a uniaxial symmetry broken structure. This is conclusive of the excessive and undue experimentation that is required to practice the alleged invention. It is appropriate to consider the results of experiments performed by the patentee. *Ormco Corp. v. Align Tech., Inc*., 498 F.3d 1307, 1318-19 (Fed. Cir. 2007) ("If an inventor attempts but fails to enable his invention in a commercial product that purports to be an embodiment of the patented invention, that is strong evidence that the patent specification lacks enablement."); *Liebel-Flarsheim Co. v. Medrad, Inc*., 481 F.3d 1371, 1379 (Fed. Cir. 2007) (finding no genuine issue of fact existed as to undue experimentation where inventors admitted they unsuccessfully tried to make the claimed systems).

LMS alleges that just two of the [redacted] samples Dr. Lambeth made are embodiments of a uniaxial symmetry broken structure, but as discussed above, one sample is argued in the patent to be uniaxial, while the other is argued to be symmetry broken, but neither sample is both uniaxial ***and*** symmetry broken. SUF, ¶ 174-175, 228. [redacted]t. The excessive experimentation and lack of meaningful guidance in the specification [redacted].

[redacted]

[redacted]

This is strong proof that the specification filed that day is not enabled given that the inventor himself still did not [redacted] nor know how to control the conditions. It is common sense that if the author of the specification did not know how to control the conditions to make the claimed invention, the written specification cannot have taught it. *Liebel-Flarsheim*, 481 F.3d at 1379 (finding lack of enablement when inventors were unable to produce a system covered by the claims without more experimentation and testing).

E. The '988 Patent Claims' Breadth Requires A Finding Of No Enablement

The Court is to consider "the breadth of the claims" when determining if the patent is enabled. *In re Wands*, 858 F.2d at 737. Here, claim 1 of the '988 patent requires (1) a substrate; (2) at least one bcc-d layer which is magnetic, forming a uniaxial symmetry broken structure; and (3) at least one layer providing a (111) textured hexagonal atomic template between the substrate and the bcc-d layer. As claimed, "the BCC-d layer which is magnetic" can be any BCC material of any size. Likewise, the "template" layer can be any hexagonal FCC or HCP material of any size. As such, there are boundless number of materials that can qualify as either layer. These materials may be in their pure form (such as a pure copper layer) or as a composition or alloys of two or more materials, (such as iron mixed with cobalt). *Id.*, ¶ 236-237.

Dependent claims 18 and 19 illustrate this point. Claim 18 lists out at least 26 possible iron alloys that can be used as the BCC layer including alloys and claim 19 discloses that the template layer could be composed of at least 18 different materials. *Id.*, ¶ 236-237. These enumerated options alone provide 468 (26 times 18) different structural possibilities and that does not count using alloys of two or more elements as the claims allow. For the asserted claims to be valid, the '988 patent must enable a POSA to make a uniaxial symmetry broken structure using any magnetic BCC material, and any FCC or HCP material as a template, without undue experimentation. The '988 patent does not come close to doing this.

Further, there is no limit on the size of these uniaxial symmetry broken structures and the claim's scope purports to cover polycrystalline structures that contain millions of crystals in each of the three layers. Thus, because the description of the '988 patent does not enable a POSA to make and use a uniaxial symmetry broken structure in both single and polycrystalline structures, the '988 patent is invalid. *Sitrick*, 516 F.3d at 999.

In sum, application of the *Wands* factors establishes that no reasonable jury could find that the '988 patent enables a POSA to make the claimed invention. The Court should grant summary judgment of invalidity under 35 U.S.C. § 112 for lack of enablement.

VI. LMS CANNOT RECOVER PRE-SUIT DAMAGES

LMS is not entitled to pre-suit damages because it cannot prove that it, and all prior owners of and licensees to the '988 patent, satisfied the requirements of 35 U.S.C. § 287(a). The '988 patent is subject to § 287 because at least two licensees of the '988 patent, [redacted] sold products that, under LMS's theory of infringement, practice the '988 patent. LMS has not presented any evidence that either [redacted] marked these alleged patented products, and thus cannot show constructive notice through marking. It is also undisputed that LMS did not provide notice to Western Digital of its alleged infringement of the '988 patent prior to the May

2016 filing of the complaint, and therefore cannot prove actual notice. LMS has not demonstrated either constructive or actual notice, and thus cannot recover pre-suit damages as a matter of law.

A. Legal Standard

To recover damages prior to the filing date of the lawsuit, a patentee must give the alleged infringer either actual notice or constructive notice. Constructive notice occurs when a patentee affixes the patent number to any article it makes or sells and when it requires its licensees to do the same on all of their products that practice the patent. 35 U.S.C. § 287(a); *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1365 (Fed. Cir. 2017) ("*Arctic Cat I*"). The patentee bears the burden of proving compliance with the marking requirement of § 287. *Id.* at 1367; *see also Gart v. Logitech, Inc.*, 254 F.3d 1334, 1339 (Fed. Cir. 2001). "[A]n alleged infringer who challenges the patentee's compliance with § 287 bears an initial burden of production to articulate the products it believes are unmarked 'patented articles' subject to § 287." *Arctic Cat I*, 876 F.3d 1368. This burden is described as a "low bar." *Id.*

Section 287 applies to licensees regardless of whether the patentee authorized the licensee to make and/or sell its products through a covenant not to sue or license. *Amsted Indus. Inc. v. Buckeye Steel Castings Co.*, 24 F.3d 178, 185 n. 2 (Fed. Cir. 1994). When a licensee fails to mark, the court considers whether the patentee made reasonable efforts to ensure the licensee complied with the marking requirements; if not, the licensee's failure to mark prohibits the patentee from recovering pre-suit damages. *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1111 (Fed. Cir. 1996). Stopping sales does not cure a marking failure. *Arctic Cat Inc. v. Bombardier Recreational Prod., Inc.*, No. 14-CV-62369, 2018 WL 3820610, at *7 (S.D. Fla. Aug. 10, 2018) ("*Arctic Cat II*").

B. LMS Has Not Demonstrated Constructive Notice

No reasonable juror could find that LMS satisfied the requirements of § 287. As set forth above, SBS, an Acacia subsidiary, previously owned the '988 patent and (through Acacia) licensed

the '988 patent to [redacted] Section II.C, *supra*. Because [redacted] both sold products that practiced the '988 patent under LMS's infringement theory, the '988 patent is subject to the requirements of § 287. *Id.* LMS did not produce any evidence that these products are not subject to § 287. *Id.* LMS also failed to show that either [redacted] marked their allegedly patented products, or that SBS, Acacia, LMS, or any other owner of the '988 patent attempted to require [redacted] to mark their products with the patent number. *Id.* The Court should thus grant summary judgment of no constructive notice. *Arctic Cat II*, 2018 WL 3820610, at *7 (granting summary judgment of no constructive notice).

[redacted] as a licensee, sold devices that embodied the '988 patent and did not mark those products. [redacted] entered into [redacted] SUF, ¶¶ 252-254. [redacted] nor did Acacia or SBS request that [redacted] mark its products. *Id.*, ¶¶ 255, 260. After entering into the agreement, [redacted] sold PMR HDDs, including the PMR HDD [redacted]. *Id.*, ¶¶ 249-251, 256-259. Because LMS asserts that all PMR HDDs practice the '988 patent, [redacted] PMR HDDs are patented products. *Id.*, ¶¶ 240-243, 259. LMS has not presented any evidence why these licensed products would not infringe. *Id.*, ¶260. As such, the sales of [redacted] PMR HDDs triggered § 287's marking requirements. But [redacted] did not mark its PMR HDDs, nor did the [redacted] *Id*. LMS thus cannot prove constructive notice as a matter of law for the [redacted] PMR HDDs, and summary judgment of no constructive notice should be granted on this basis alone. *See, e.g., U.S. Ethernet Innovations, LLC v. Acer, Inc*., No. C 10-3724 CW, 2013 WL 4456161, at *9 (N.D. Cal. Aug. 16, 2013) (holding no constructive notice when licensee did not mark patented products).

C. LMS Never Provided Western Digital With Actual Notice

Because LMS cannot demonstrate constructive notice, to recover pre-suit damages, LMS bears the burden of proving that it provided Western Digital with actual notice of infringement. *Sentry Prot. Prods., Inc. v. Eagle Mfg. Co.*, 400 F.3d 910, 918 (Fed. Cir. 2005). Actual notice requires that prior to filing suit, ***the patentee communicate a charge of infringement*** of specific patents by a specific product or group of products. *Funai Elec. Co. v. Daewoo Elecs. Corp.*, 616 F.3d 1357, 1373 (Fed. Cir. 2010). Here, neither LMS nor any previous assignee provided Western Digital with actual notice and alleged infringement of the '988 patent. SUF, ¶¶ 274-278.

LMS may contend that Western Digital had actual notice of infringement based on (1) citations of the '988 patent in Western Digital patents and/or (2) letters Western Digital received from third parties regarding the '988 patent. *Id.* Neither of these "communications" can constitute actual notice as a matter of law. First, the patent citations and third-party letters cannot constitute actual notice because they are not affirmative communications ***from the patentee***. *See Amsted*, 24 F.3d at 187; *see also Robert Bosch LLC v. Alberee Prods., Inc.*, C.A. No. 1:12-574-LPS, 2015 WL 5576746, at *3 (D. Del. Sept. 16, 2015) (holding on summary judgment that third party email did not satisfy the notice requirements because it was not an affirmative act by the patentee). Second, these "communications" do not put Western Digital on notice of a specific claim of infringement, which is required by law. *Bosch*, 2015 WL 5576746, at *3.

As LMS cannot prove constructive notice through marking or actual notice, the Court should grant Western Digital's motion for summary judgment and limit LMS's damages, if any, to those occurring after the date of the filing of the complaint.

VII. CONCLUSION

Western Digital respectfully requests that the Court grant summary judgment of non-infringement, invalidity due to lack of enablement, and lack of pre-suit damages.

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CERTIFICATE OF COMPLIANCE

The undersigned certifies that this brief, when removing graphics and test results (*see* Dkt. 153), does not exceed 30 pages. A Word copy of the brief, identical to the as-filed copy but removing graphics and test results, is available upon request.

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